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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,352	02/13/2006	Jang-Kun Song	8071-148T (OPP043105US)	5683
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EXAMINER				
HOLTON, STEVEN E				
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2629				
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06/17/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/520,352

**Applicant(s)**

SONG ET AL.

**Examiner**

Steven E. Holton

**Art Unit**

2629

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 3-5, 7 and 20-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-5, 7, 24-28, 32 and 33 is/are rejected.
- 7) ☒ Claim(s) 20-23 and 29-31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB08)
- Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This Office Action is made in response to applicant's amendment filed on 4/15/2009. Claims 3-5, 7, and 20-33 are currently pending in the application. An action follows below:

***Response to Arguments***

2. Applicant's arguments, see pages 10-12, filed 4/15/2009, with respect to the rejection(s) of claim(s) 1-19 have been fully considered and are persuasive in light of the amendments to the claims. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art from the IDS filed on 2/24/2009.

***Claim Objections***

3. Claim 33 is objected to because of the following informalities:

Claim 33, line 3, the line states "period after he black data..." It should be "period after the black data..."

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 3-5, 24-28, 32, and 33 are rejected under 35 U.S.C. 102(a) as being anticipated by Matsumura et al. (USPqPub: 2002/0044117), hereinafter Matsumura. The Examiner notes that Matsumura is the US filing of JP 2002-72968A, which was provided in the IDS filed on 2/24/2009.

Regarding claim 3, Matsumura discloses a liquid crystal display device comprising, "a liquid crystal display panel assembly (paragraph 41; similar to the prior art display devices shown in Figs. 11 and 14) including a first, a second, and a third scanning area (Fig. 1, elements block 1, block 2, and block 3), each of the scanning areas including a plurality of gate lines (Fig. 1, elements Y1 – YA3; paragraphs 41 and 42) connected to a plurality of pixels (Fig. 14, elements 14, 15, and 16 form a single pixel ; paragraph 43 mentions the pixels in the display blocks) which include switching elements (Fig. 14, element 15) connected to the gate lines (Fig. 1, elements Y1 - YA3) and data lines (Fig. 14, elements X1-X5; paragraph 42); a gate driver (Fig. 1, element 2) applying a voltage to the gate lines for turning on the switching elements (Fig. 1, the signal pulses shown on lines Y1 - YA3 represent the voltages applied to the gate lines); a data driver (Fig. 1, element 3) selecting gray voltages corresponding to gray signals to

the pixels via the data lines as data signals, each of the data signals including normal data signals and a black data signal (Fig. 1, the signals shown along the X1-Xm line represent normal data signals, boxes 1, 2, 3, etc. in periods 18-20, and black data signals, the non-image data in periods 21-24; paragraph 42 discloses using black data as the information during the non-image data periods); and a signal controller providing the gray signals and control signals for controlling the gate driver and the data driver (Fig. 11, elements 4 and 5), wherein, in one frame period, the signal controller controls the gate driver and the data driver such that the black data signal is applied to pixels connected to gate lines of the second scanning area while gate-on voltages are applied to the gate lines of the second scanning area (Fig. 1, period 22, non-image data is applied to pixels connected to gate lines in block 2) and then, the normal data signals are applied to pixels connected to gate lines of the first scanning area while gate-on voltages are sequentially applied to the gate lines of the first scanning area in an arranging direction in which the gate lines are arranged (Fig. 1, period 18, normal image signals are applied to pixels connected to the gate lines in block 1); the signal controller controls the gate driver and the data driver such that, in said one frame period, gate-on voltages are applied to gate lines of the third scanning area after the last gate-on voltage is applied to the last gate line of the first scanning area and then the black data signal is applied to the pixels connected to the gate lines of the third scanning areas (Fig. 1, period 23, non-image data is applied to pixels connected to the gate lines in block 3; paragraphs 42-49 provide a detailed explanation of the driving method of this embodiment of the display)."

Regarding claim 4, Matsumura discloses applying the black data signal simultaneously to the pixels in one of the scanning areas (Fig. 1, periods 21-24 apply black image data simultaneously to all pixels in a specific group).

Regarding claim 5, Matsumura discloses applying either non-image data or image data to the pixels in a group. Liquid Crystal display panels inherently exhibit a memory ability where a pixel stores an applied voltage for a frame until a new voltage is applied to the pixel. Therefore, in the periods when gate lines are not being selected for writing of data will hold previous voltage signals applied to that pixel.

Regarding claim 24, Matsumura discloses pixels are connected to gate lines in a direction perpendicular to the arranging direction of the gate lines (Fig. 14; the connections the pixels along each gate line).

Regarding claim 25, Matsumura discloses a display with a gate driver (Fig. 11, element 2) and the gate driver including a plurality of gate driving devices (Fig. 3, each OR gate element) so that each gate line is connected to a gate driving device (Fig. 3, gate lines YO1-YOA3 are connected to individual gate lines) and the gate lines connected to pixels (Fig. 14, gate lines Y1-Y5 are connected to pixels) for controlling the operation of the pixels of the display.

Regarding claim 26, Matsumura discloses a display device that all pixels in the display are driven using both image data and black data signals (Fig. 1, pixels in the first area are driven by black signals from period 21 and image signals in period 18; other pixels are drawn with both black and image signals at other periods of driving). Matsumura's driving scheme results that all pixels in the display are driven using black

signals once during each frame period (Fig. 1, periods 21-24; paragraphs 42-51).

Therefore, more than 50% of the pixels hold the black data signal during the course of the frame period.

Regarding claim 27, Matsumura discloses applying normal image signals to pixels of the second area after black image signals are supplied to the pixels in the third image area (Fig. 1, period 23 supplies non-image black signals to pixels in block 3; period 19 supplies regular image signals to pixels in block 2).

Regarding claim 28, the Examiner notes that the steps of this method are also described as part of claim 3. Matsumura discloses a method of operating a liquid crystal display device with steps of applying black data to pixels connected to scan lines in a second scanning area (Fig. 1, period 22), then applying normal image data to scan lines in a first scanning area in an arranging direction of the scanning lines (Fig. 1, period 18), then applying black data to pixels connected to scan lines in a third scanning area after applying normal image data to pixels connected to the first scanning area (Fig. 1, period 23).

Regarding claim 32, Matsumura discloses a display device that all pixels in the display are driven using both image data and black data signals (Fig. 1, pixels in the first area are driven by black signals from period 21 and image signals in period 18; other pixels are drawn with both black and image signals at other periods of driving). Matsumura's driving scheme results that all pixels in the display are driven using black signals once during each frame period (Fig. 1, periods 21-24; paragraphs 42-51).

Therefore, more than 50% of the pixels hold the black data signal during the course of the frame period.

Regarding claim 33, Matsumura discloses applying normal data signals to pixels connected to gate lines in the second scanning area after applying black data signals to pixels connected to gate lines of the third scanning area (Fig. 1, period 19).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumura.

Regarding claim 7, Matsumura discloses all of the limitations except, "the liquid crystal display is in an optically compensated bend mode."

The Examiner takes Official Notice that optically compensated bend (OCB) mode liquid crystal displays are well known in the art as one type of liquid crystal display device.

At the time of invention it would have been a matter of design choice for one of ordinary skill in the art to use the driving scheme described by Matsumura on an OCB type of liquid crystal display. It would have been obvious that the driving scheme could be used with other types of active matrix liquid crystal displays and provide the same



reduced residual images regardless of the type of liquid crystal display. Thus, it would have been a matter of design choice to have a liquid crystal display that was an OCB mode display or other type of liquid crystal display.

***Allowable Subject Matter***

6. Claims 20-23 and 29-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The present invention is directed to a method of driving a liquid crystal display device and display device. Claims 20 and 29 identifies the uniquely distinct features of driving gate lines in scanning areas in a first arranging direction to supply normal image data to pixels during a first frame and then driving the gate lines in the scanning areas in a direction opposite the arranging direction to supply normal image data to pixels during a second frame immediately following the first frame. The closest prior art, Matsumura and Surguy (USPN: 5233338) disclose a method of scanning groups of pixels of a display device in a first arranging direction in all frames and a method of alternating the scanning direction of all gate lines in a signal frame, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven E. Holton whose telephone number is (571)272-7903. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bipin Shalwala/  
Supervisory Patent Examiner, Art Unit 2629

/Steven E Holton/  
Examiner, Art Unit 2629  
June 12, 2009